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Determinants of Household Saving in Dire Dawa City, Eastern Ethiopia

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Abstract
Household saving is a crucial determinant of the supply of funds for investment. However, saving trend in Ethiopia particularly in the study area is very low and little is known empirically about its patterns and determinants. This study, therefore, was aimed at investigating the determinants of the saving behavior of households in Dire Dawa city, Eastern Ethiopia. Data were collected from four Kebeles and 122 sample households taken from the selected kebeles by using interview schedule. Descriptive statistics and Tobit regression model were used to analyze the data. The results showed that 70.5% of the entire sample households had savings during the survey time. The results of Tobit model revealed that annual income of household head education level, credit use of the household, annual expenditure of the household, self-employed, location of business area and the perception of interest rate had significant influence on the amount of household saving in the study area. And also 57% of the households used formal institution for saving. The findings suggest that saving of the households is largely determined by income level. It is therefore important to ensure the availability of credit service, create awareness and educate the households to enhance saving.
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1. Introduction

Saving is a key macroeconomic variable, as it is a potential source of investment and thus economic growth. It also plays a role in the monetary transmission mechanism. Usually, the private sector, including households, provides the bulk of savings in an economy. Households are heterogeneous in terms of size, economic activity, income, net wealth and cultural background. This means that investigating households' behavior at the aggregate level only by looking at the "average" household ignores many potentially important aspects. Therefore, in the recent years, several central banks have increasingly invested effort into exploring households' behavior and balance sheets at the individual, i.e., the micro level (Besley, 2005).

The Ethiopian rate of national saving particularly the individual saving is expected to be very low and this low level of national saving is expected to limit the expected rate of economic growth of the economy. According to Ministry of Finance and Economic Development (2010), one of the major challenges encountered in the past five years of PASDEP implementation is low level of domestic savings to support the huge demand of the country's investment for accelerating growth and development in the process of eradicating poverty. The national saving was 9% of GDP at the beginning of the growth and transformation plan in 2010/11. Because of the low level of saving, the national investment of the Ethiopia is dependent on foreign direct investment rather than domestic investment. Though, foreign direct investment has paramount importance on Ethiopian economic growth and development, its importance is less than the domestic investment.

2. Review of Literature

Households' saving represents the difference between their current income and their current consumption. By not spending some of their current income on consumption, or alternatively by borrowing, households can accumulate financial assets, such as deposits and shares, and housing assets. One of the serious problems confronting poor countries including Ethiopia is the savings and investment gap (Deaton, 2005; Rogg, 2006).

There some theoretical models in literature that state different determinate of saving. The Orthodox household saving theories, the permanent income hypothesis assumes a rational household that maximize utility through consumption decisions. Friedman (1957) postulated a household whose consumption at time depends on its permanent income. The Life-Cycle Hypothesis is based on the assumption that consumers set their lifetime patterns of consumption and saving so as to maximize utility subject to a lifetime budget constraint (Obwona, and Ssentamu 1996). The Neo-Keynesian growth models include a saving function which goes back to the classical economists. According to Marios B. (1998), there is a separation of households into wage earners, who consume all the income they receive, and entrepreneurs, who earn profits which are saved and re-invested.

As many of the researchers indicate that the behavior of saving in Ethiopia has an impact in the economic growth of rural areas. The results of the descriptive and economic analyses of the determinants of household savings shows that 79.2% of sample households practiced saving with the average amount of 11365.3 Birr. The significant determinant explanatory variables of rural household savings in the study area were household head

education level, live stockholdings, access to credit service, income, investment, training participation, contact with extension contacts, forms of savings and saving motives (Girma *et al.*, 2013). This study shows rural farm households indeed save in respective of their low economic status. However, as these households mainly use the informal saving institutions, their savings is hardly traced in the national account. Policy-wise, efforts should be made to encourage the rural households to save through trainings and using the formal channel.

3. RESEARCH METHODOLOGIES

3.1. Background and sampling methods

Dire Dawa Administration (DDA) comprises Dire Dawa city and the surrounding rural areas. It is divided into nine urban kebeles and 21 rural kebeles. Dire Dawa city, located in the eastern part of the country, has an estimated total land area of 39.54 Km^2. It is located at 515 Km east of Addis Ababa between Addis Ababa and Djibouti. Its altitude is about 1200 meter above sea level. The total population of the DDA is projected to reach at 383,529 in July 2013, of which 192,095 (50.1%) are male and 191,434 (49.9%) are female. The majority of the population resides in urban areas, i.e., 283,773 (74%) and the remaining 99,756 (26%) lives in rural areas. Out of the total urban population of 283,773, the males constitute 14,131 (50.1%) whereas the remaining 14,663 (49.9%) are females (CSA, 2007).

A two stage sampling technique was applied to generate the required primary data. In the first stage, the nine kebeles of Dire Dawa city were grouped into two according to their level of business activity. In reference with the corporation for the purpose of earning a profit and related to providing goods and services for the market, the one with high business activity included four kebeles and that with low business activity included five kebeles. Then randomly two kebeles were selected from high business activity group and two kebeles from low business activity group. In the second stage, 122 respondents were selected randomly from four kebeles using probability proportional to size sampling method.

3.2. Model specification

In order to achieve the second objective of the study i.e. to identify determinants of household level saving of the residents of Dire Dawa Tobit model was employed.

The saving amount was the dependent variable used for this study. To analyze determinants of household saving amount, Tobit model (Tobin, 1958) was used. The Tobit model specification is given as follows:

$$Y_i^* = X_i\beta + \mu_i \text{..} i=1, 2\ldots n \quad (1)$$

$$Y_i = Y_i^* \quad \text{if } Y_i^* > 0$$

$$=0 \quad \text{if } Y_i^* \leq 0$$

Where: Y_i is the observed amount of household savings (measured in birr).

Y_i* is the latent variable which is not observed

β is Vector of unknown parameters

X_i is vector of independent variable affecting household savings.

The zero threshold value in the model is not a very restrictive assumption, because the threshold value can be set to zero or assumed to be any known or unknown value. The model parameters are estimated by maximizing the Tobit likelihood function of the following form (Maddala, 2005; Gujarati, 2007).

$$L=\prod_{Y_i^*} \frac{1}{\sigma} f\left(\frac{Y_i - \beta_i x_i}{\sigma}\right) \prod_{Y_i^* \leq 0} F\left(\frac{\beta_i x_i}{\sigma}\right) \quad (2)$$

Where f and F are the density probability function and cumulative distribution function of Yi*, respectively. Π_Y *<0* means the saving over i for which $Yi^* \leq 0$, and Π_Y *>0* means the saving over those i for which $Yi^*>0$.

Maximum likelihood estimation would use logarithmically transformed version of Equation (5). It may not be sensible to interpret the coefficients of a Tobit in the same way as one interprets coefficients in an uncensored linear model. Hence, one has to compute the derivatives of the estimated Tobit model to predict the effects of changes in the exogenous variables.

Greene (2003) proposed the following techniques to decompose the effects of explanatory variables into the probability and intensity effects of saving. Thus, a change in Xi (explanatory variables) has two effects. It affects the probability that the observation will fall in positive part of the distribution and it affects the conditional mean of Yi* in the positive part of the distribution. This decomposition approach is used in this study. The Change in the probability of saving when the independent variable X_i changes by one unit can be computed as:

$$\frac{\partial F(z)}{\partial X_i} = f(z)\, \frac{\beta_i}{\sigma} \quad (3)$$

The marginal effect of an explanatory variable on the expected value of the dependent variable is:

$$\frac{\partial E(Y_i)}{\partial X_i} = f(z)\beta_i \quad (4)$$

Where, $Z = \frac{\beta_i x_i}{\partial}$

The change in intensity of dependent variable with respect to a change in an explanatory variable among

the savers :

$$\frac{\partial E(Y_i/Y_i^*>0)}{\partial X_i} = \beta_i \left[i - Z\frac{f(z)}{F(Z)} - \left(\frac{f(z)}{F(Z)}\right)^2 \right] \quad (5)$$

Whereas F (z) is the cumulative normal distribution of Z, *f*(z) is the value of the derivative of the normal curve at a given point (i.e., unit normal density), Z is the z score for the area under normal curve, b is a vector of Tobit maximum likelihood estimates and s is the standard error of the error term.

4. RESULTS AND DISCUSSION

4.1. Descriptive Results

4.1.1. Saving performance of the sample households

Household savings is average value being deposited monthly at the time of survey by households. Households usually save from their earnings for consumption smoothing purposes throughout their life time, accumulation of wealth, and for contingency purposes in case of risk and uncertainty. The results revealed that the mean monthly saving amount of the total sample household heads was found to be 968.83 birr with standard deviation of 01805.55. Minimum and maximum saving amount of the total sample household heads was about 0 and 10000 respectively.

Among the sampled households, about 89.34% perceived saving positively and the rest perceived it either negatively or indifferent.

From the sampled households, about 53.23% were from the business areas where business activities are relatively higher in the city. The rest were from relatively low business areas.

4.1.2.1. Sex and age distribution

The mean family size of the households was about 4.62 individuals with a standard deviation of 2.02 and minimum of 1 and a maximum of 14 household members. The mean age of the households was reasonably quite high and it was 41.49 years with a standard deviation of 10.79 and minimum of 20 and a maximum of 70 years household members. As shown in table 6, of the surveyed households, 52.48% were female respondents while 48.52% were male respondents. The data about the respondents' age showed that the average was about 42 years which ranged from 20 to 70 years.

4.1.2.2. Education level of the household head

The analyzed survey data revealed that, about 85.25% of the respondents have attended their formal education (primary, secondary, and tertiary) and the rest were either illiterate or had religious education. On average respondents education level is 9.55 grades with standard deviation of 5.5.

4.1.3. Socioeconomic characteristics

4.1.3.1. Household income

The most difficulty was the query on the level of income the household earns. Most of the respondents were not willing to state their earnings and others did not really know their average monthly income. But appropriate emphasis was given in the training session to this part and the enumerators were able to come up with a fair estimate of households' average monthly paycheck, taking average monthly expenditure as a cross checking mechanism.

4.1.3.2. Household expenditure

In line with this, the average monthly expenditure of the sampled households was about 2941 birr. Among different expenditure items of the households; like food, electricity, water, transport, medical, etc., food expenditure takes the lion's share as usually witnessed in developing economies.

4.1.3.3. Types of employment

Concerning the employment structure of the respondents, 30.69% of the respondents were employed in the formal sector for salary, 21.45% run their own businesses, 19.31% were housewives and students, and the rest of the respondents were unemployed, and retired. The survey result also showed that 71.29% households were living in their own house.

4.1.4. Institutional Factors

4.1.4.1. Credit used

According to the sample survey result the mean of credit used by the sample households was about birr 529.85. About 74% of the sample households, during the survey, reported that they used to have annual investment plans but the rest reported that they did not have.

4.1.4.2. Opinion towards the existing bank interest rates

Respondents were asked to report their opinion towards the existing bank interest rates on savings. The result indicated that about 63% of them perceived positively and it is a big deal and the rest were in different. In here, religion was not considered by the sample respondents an issue regarding whether to save or not in banks due to interest rates. Because banks, these days, are promoting and giving interest-free saving services in Dire Dawa city.

4.1.5. Level of saving practice in the household

Among the households who had practiced saving, 57% of them used in modern type of saving method in which they take account of their money to save in private and governmental banks. This bank offers different kind of services to the societies that initiate and appreciate them to save as much as possible. Abound with the service that banks provide to the society is regarding to money transition and deposit that related with the current market system and households earning. The competition among the private banks raises the value of saving amongst the household by expanding branches and used different technologies that benchmark their sub branches. Beside to this, the government plays various roles to accomplish the five years plan that on the subject of investment and development in the country. One of the known systems that the government experienced to save money is selling bond to dweller until the plan get done.

4.2. Econometric Model Results

Data exploration is an important preliminary step before estimation is done. The precision of estimating the coefficients of variables is reduced by the existence of multicolliniarity between variables that is if the explanatory variables are highly correlated it is difficult to distinguish the effects of one single explanatory variable on the dependent variable (Maddala, 1992) and (Gujarati, 1998) has established a rule of thumb, if VIF of a variable exceeds 10, that variable is said to be highly collinear. Accordingly, the VIF result shows that the data had no serious problem of multicollinearity.

Table 13: Maximum likelihood estimates of the Tobit model

Explanatory variables	Tobit			Marginal Effects	
	Coeff.	Standard Error	p-value	Coeff.	p-value
Annual income of the household	0.54***	0.27	0.000	0.48***	0.000
Age of the household	-6.43	6.76	0.354	-5.72	0.352
Family size of the household	-26.01	41.54	0.539	-23.13	0.538
Education level of the household	168.23**	76.49	0.032	149.59**	0.029
Sex of the household head	-184.55	127.93	0.161	-164.64	0.158
Credit use of the household	307.79**	136.55	0.028	271.31**	0.026
Annual investment of the household	-140.18	200.70	0.495	-126.04	0.493
Annual expenditure of the household	-0.25***	0.06	0.000	-0.22***	0.000
Employed in Gov't Org.	9.95	127.86	0.941	8.85	0.941
Employed in Non Gov't Org.	201.83	227.20	0.407	183.77	0.405
Self-employed	431.99***	198.25	0.008	381.34***	0.007
Unemployed	-370.47	259.06	0.143	-308.96	0.14
Saving perception of the household	248.10	364.16	0.503	211.43	0.502
Location of business area	258.69*	133.39	0.058	228.99*	0.055
The perception of interest rate	444.79***	156.50	0.006	383.95***	0.005
House ownership	334.42	157.65	0.125	295.09	0.114
Constant	-1167.78**	431.91	0.009		

Source: computed from surveyed data, 2014

***, ** and * means significant at the 1%, 5% and 10% probability levels, respectively.

5. CONCLUSION

Though the theory of saving is yet to be conclusive on the determinants of saving from this study, the econometrics model result shows that out of 16 explanatory variables which were considered in the analysis 7 variables were found to be significantly influence the saving amounts of the sample households. These are; annual income of household head, education level, credit use of the household, self-employed, location of business area and the perception of interest rate positively influenced the saving amounts of the urban households in Dire Dawa City, while annual expenditure of the household negatively influence household saving. These factors therefore have to be considered in designing strategies aimed at improving the saving of the society in the study area.

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